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IN REPLY REFER TO:

NATIONAL WATER QUALITY LABORATORY TECHNICAL MEMORANDUM 2000.01

January 7, 2000

To: Distribution E

From: Merle Shockey, Acting Chief
National Water Quality Laboratory
Branch of Analytical Services

Subject: Update on blank correction omission for Kjeldahl nitrogen and phosphorus test on samples sent to the National Water Quality Laboratory

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A team consisting of personnel from the NWQL, NAWQA, the Colorado District, and BQS investigated the blank omission problem summarized in the November 17 memorandum from the NWQL to the Division. The team has concluded that the omission of the digested blank in the calibration curves for the Kjeldahl nitrogen and phosphorus analytical lines resulted in no significant bias or increase in variability. Therefore, data will not be updated in the database and users of the data should not correct data tables. The affected tests for Kjeldahl nitrogen include lab codes 1985, 1986 and 1994 and for phosphorus include lab codes 1983, 1984 and 1992.

Background

On November 17, 1999 the National Water Quality Laboratory (NWQL) released a memo regarding an inadvertent omission of a digested blank as a calibration standard for Kjeldahl nitrogen and phosphorus tests during the period from April 20 to October 4, 1999. The NWQL originally estimated that the effect of the omission resulted in a high bias on affected data of about 0.05 milligram per liter for nitrogen and 0.01 milligrams per liter for phosphorus based on the average rise in blind blank concentrations for each analysis during the affected period.

Discussion

To determine the effect on data generated during the period and to further advise our customers on how to interpret affected data, all original analytical runs were recalculated inserting the digested blank as a calibration point.

This analysis of all data indicate that the omission of the one data point in the calibration curves did not result in a significant bias or increase the variability on the analytical lines. The tests for phosphorous had no bias and nitrogen tests had a median bias of less than 0.002 mg-N/L. The reporting limit for phosphorous is 0.05 mg-P/L and for nitrogen is 0.1 mg-N/L. Bias for both analytes is more than a factor of 10 below the reporting limit. Variance due to the omission is also minimal when compared to normal variance between runs. A statistical analysis of all data and this Tech Memo are available with further discussion and interpretation of these charts at http://wwwnwql.cr.usgs.gov/Public/nwql_memo.html.

Conclusions

Both analytical lines were performing within the specified parameters of the methods. Data may be used reliably using the data qualifiers that would routinely apply to these methods. BQS quality assurance data for all NWQL routine water analysis can be found at http://bqs.usgs.gov/bsp/mainpage.html.

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